CLAIMS

We claim:

1. A photosensitizer-carrier composition, comprising:

(a) a mixture of at least one photosensitizer and at least one carrier agent; and

(b) at least one solid support physically associated with said mixture; wherein said mixture forms liposomes upon hydration.

2. The composition of claim 1 wherein said support is an endo-support, and said photosensitizer and carrier agent mixture is deposited on said endo-support.

3. The composition of claim 1 wherein said mixture forms, upon hydration with an aqueous based medium, a complex selected from the group consisting of micelles, vesicles, emulsion, gel and matrix.

4. A method for formulating a mixture of photosensitizer and carrier agent, comprising the steps of:

(a) mixing together at least one photosensitizer and at least one carrier agent in liquid form in contact with at least one solid support; and

(b) physically associating the mixture of photosensitizer and carrier agent with said solid support upon drying said mixture; wherein said mixture forms liposomes upon hydration.

5. The method of claim 4 wherein said carrier agent in liquid form comprises the agent dissolved in an organic solvent.

6. The method of claim 5 wherein said solvent is volatile.

7. The method of claim 4 wherein said support is an endo-support, and said photosensitizer and carrier agent mixture is deposited on said endo-support upon solidification.

8. The composition of claim 1 wherein said solid support is soluble or hydratable in an aqueous based medium.

9. The composition of claim 8 wherein said solid support is selected from the group consisting of a monosaccharide, disaccharide, aminoglycoside, and derivatives thereof.

10. The composition of claim 9 wherein the disaccharide is selected from the group consisting of maltose, lactose, sucrose and trehalose.

11. The composition of claim 1 wherein said photosensitizer is selected from the group consisting of porphyrins, pyrroles, tetrapyrollic compounds, expanded pyrrolic macrocycles and their derivatives.

12. The composition of claim 11 wherein said porphyrin derivative is selected from the group consisting of green porphyrins, tetrahydrochlorins (chlorins bacteriochlorins, isobacteriochlorins), pyropheophorphides, purpurins, texaphyrins, phenothiaziniums, phthalocyanines, napthalocyanines, porphycenes and pheophorbides.

13. The composition of claim 12 wherein said green porphyrin is selected from the group consisting of benzoporphyrin derivatives (BPD).

14. The composition of claim 13 wherein said BPD is selected from a group consisting of A ring, B ring, C ring, and D ring derivatives.

15. The composition or method of claim 14 wherein said BPD ring derivative is selected from a group consisting of BPD-MA, A-EA6 and A-B3.

16. The composition of claim 7 wherein said endo-support is non-hydratable in an aqueous based medium.

17. The composition or method of claim 16 wherein said endo-support is a polymeric compound.

18. The method of claim 7 wherein said endo-support is removed after hydration of the photosensitizer-carrier mixture.

19. The composition of claim 1 wherein said support is an exo-support, and said photosensitizer and said carrier are encapsulated by said exo-support.

20. The composition of claim 1 wherein said carrier agent is a block copolymer.

21. The composition of claim 20 wherein said block copolymer carrier is selected from the group consisting of symmetric A-B-A and non-symmetric A-B-A' type triblock copolymers.

22. The composition or method of claim 21 wherein said triblock copolymer is polyoxyethylene polyoxypropylene block copolymer of the formula $HO(C_2H_4O)_a(C_3H_6O)_b(C_2H_4O)_cH$, where a and c are independently 1-150 units and b= 10-200 units with the overall molecular weight ranging from 1,000 to 50,000 daltons.

23. The composition or method of claim 22 wherein said triblock copolymer is selceted from a group consisting of poloxamers wherein a = c = 1 to 150 units and b = 10-200 units

24. The composition or method of claim 23 wherein said poloxamer is selected from a group consisting of poloxamer 403 (P123), poloxamer 407 (F127), poloxamer 402 (L122), poloxamer 181 (L61), poloxamer 401 (L121), poloxamer 185 (P65), poloxamer 188 (F68) and poloxamer 338 (F108).

25. The composition or method of claim 24 wherein said poloxamer is selected from a group consisting of poloxamer 181 (L61), poloxamer 401 (L121), and poloxamer 402 (L122).

26. The method of claim 4 further comprising the step of hydrating said mixture of photosensitizer and carrier agent with an aqueous based medium to produce a photosensitizer-carrier complex.

27. The method of claim 26 wherein said complex is selected from a group consisting of micelles, vesicles, emulsions, gels and matrices.

28. The method of claim 4 wherein said mixture of photosensitizer, carrier agent, and solid support is hydrated, further processed to a reduced size or further formulated.

29. A method for formulating a photosensitizer with a solid support, comprising combining a mixture of at least one photosensitizer dissolved in at least one carrier agent in liquid form; and at least one solid support not soluble in said carrier agent; wherein said mixture may be physically associated with said support when in a solid form and wherein the mixture forms liposomes upon hydration.

30. A method for conducting photodynamic therapy comprising:

administering a photosensitizer and copolymer complex produced by hydration of the composition of claim 1 to a subject in need of photodynamic therapy; and irradiating said subject to activate said photosensitizer.